

ZOOLOGY.—*New species and distribution records of diaptomid copepods from the Marsh collection in the United States National Museum.*<sup>1</sup> MILDRED STRATTON WILSON. (Communicated by WALDO L. SCHMITT.)

This paper is based on the material concerning the genus *Diaptomus* that accumulated in the collection of Dr. C. Dwight Marsh following the publication of his paper on the distribution of the genus in 1929. His studies on other fresh-water calanoids were entirely included in the posthumous paper published in 1933. There were found in the collection, in addition to new distribution records, slides of two undescribed species. Of these, the one from a collection made in Guatemala is represented by several slides. The name *D. amatitlanensis*, given by Dr. Marsh in his notes, is retained. The other species, from a collection made in New Jersey, is named *D. lighti* for Prof. S. F. Light, of the University of California. *D. lighti* is represented by a unique male specimen, unfortunately incomplete as regards the right antennule. Since the specimen shows no indication of abnormality and is distinctly different from other related diaptomids, it is being designated a new species.

There was also found a mounted specimen of *D. augustaensis* Turner, 1910, hitherto known only from the original collection. Since Turner's description was not complete, especially as regards the left fifth leg and the modified right antennule of the male, it is redescribed on the basis of the newly found specimen.

#### DISTRIBUTION RECORDS

Dr. Marsh included most of the known information about the distribution of *Diaptomus* in his paper on the distribution of the genus (1929). Later (1931) he published a paper on collections made in El Salvador, which reported finding there *D. marshi* and *D. siciloides*. Wright had also found *D. siciloides* in Lake Erie, and his material is a part of the Marsh collection in the National Museum. Marsh mentioned (1931) that Bajkov also found *D. siciloides* in Lake Winnepegosis, Manitoba. Bajkov (1929) added further distribution records for Manitoban lakes, as follows: *D. ashlandi*, *D. leptopus*, *D. shoshone*, *D. sicilis*, and *D. tenuicaudatus*. Of these, a mounted specimen of *D. ashlandi* is in the Marsh collection.

Unpublished records of collections made by or presented to Dr.

<sup>1</sup> Received July 11, 1941.

Marsh follow. The notes concerning these collections are very brief, and complete information is often lacking.

- D. ashlandi* Marsh: Klamath Lake, Klamath Falls, Oreg., collected by C. D. Marsh, August 26, 1929.
- D. augustaensis* Turner: Chapel Hill, N. C., collected by R. E. Coker, May 1931.
- D. bacillifer* Kölbel: Tundra pond on east side of Lake Harbour, southern coast of Baffin Land, collected by F. Johansen, August 23, 1927.
- D. clavipes* Schacht: Ada, Pontotoc County, southern Oklahoma, collected by J. G. Mackin, contributed by S. Wright.
- D. eiseni* Lilljeborg: Tundra ponds at Port Burwell and Wakeham Bay, Hudson Strait, collected by F. Johansen, 1927.
- D. minutus* Lilljeborg: White Lake, N. C., collected by R. E. Coker, first record of occurrence south of Indiana (Marsh 1929); Newton, Mass., collected by C. B. Wilson. Wilson (1932) has reported *D. minutus* from the Woods Hole region.
- D. oregonensis* Lilljeborg: Flathead Lake, Mont.
- D. sanguineus* Forbes; Ada, Pontotoc County, southern Oklahoma, collected by J. G. Mackin, contributed by S. Wright.
- D. sicilicis* Forbes: Flathead Lake, Mont., collected by R. T. Young, August 10, 1929; Gabas road (?) near Midland, Oreg., collected by C. D. Marsh, August 27, 1929. The most western location reported for *D. sicilicis* has been Yellowstone Park (Marsh 1929).

#### SYSTEMATIC DISCUSSION

##### *Diaptomus amatitlanensis*, n. sp.

Fig. 1, a-d

*Specimens examined*.—Thirty-six mounted specimens, 17 female, 19 male, Marsh slides 5402-5405 and 5409-5419. Collected by Chancey Juday in Lake Amatitlan, Guatemala, February 5, 1910. Male holotype, U. S. N. M. no. 79366, Marsh collection, slide 5409.

*Description*.—Metasome convex in dorsal profile, tapering slightly posteriorly. Urosome relatively short, furcal setae short; furca ciliated on both inner and outer margins. Antennules reaching to end of furca.

*Female*: Length about 1.4-1.5 mm, exclusive of furcal setae. Last segment of metasome bearing a blunt dorsal tooth, variable in size; posterolateral projections inconspicuous, rounded, bearing two spines; spine of dorsal side minute, sharply pointed, that of lateral tip stout, somewhat curved. Spines of genital segment of urosome stout and long; second segment shortened, right side produced into prominent spine-like caudal process. *Fifth legs*: Relatively slender, with long, stout basal spines. Third segment of exopodite distinct, its spine twice the length of seta. Spine of second segment short; claw almost as long as inner margin of first segment, nearly straight; outer margin of claw bearing two slender teeth or none; inner margin with ten to eighteen stout teeth on anterior surface. Endopodite half the length of inner margin of first segment of exopodite, bearing two short setae, inserted subapically and extending slightly below the tip, lateral seta one-third longer than median; tip truncate, with a narrow asymmetrically placed groove bordered by a line of slender hairs.

*Male*: Length about 1.25-1.4 mm, exclusive of furcal setae. Left antennule with usual setal formula. Right antennule markedly swollen, major spines on segments 10, 11, and 13; those on 10 and 11 slender, slightly curved, length less than width of segments; spine on segment 11 about one-

third longer than that on segment 10. Spine on segment 13 large, almost twice as long as width of segment, broad at base, tapering, obliquely directed. Segment 14 with conspicuous, obliquely directed spinous process arising at proximal angle, and almost as long as spine on segment 13. Small, distally directed spinous processes at mid-margin of segments 15 and 16. Processes of segments 14, 15, 16 and depressed process of segment 17, accompanied by modified setae, stiff, slender and blunt-ended. Process on antepenultimate segment tapering, slightly outcurved, length less than that of penultimate segment. *Fifth legs*: Relatively narrow, left leg reaching to slightly beyond distal end of first segment of right exopodite. Basal spines long and stout. *Right leg*: Basal segment about as long as wide, margins rounded. Second basal segment much longer than wide, lateral hair at distal fourth; a somewhat diversified process ending in a rounded lobe projects transversely on the distal posterior face. First segment of exopodite short, wider than long, outer margin longer than inner, terminating in distally directed lobe; running across the posterior face of the segment from near outer to near inner margin is a triangularly elongate ridge with its distal extremity narrowed; a small rounded lamella projects from the distal border of the segment. Second segment broad, length less than twice width; midway of the segment, beginning at the medial margin, is a straight, obliquely directed ridge; lateral spine near distal end, relatively slender, length less than width of segment, distal half curved. Claw about as long as rest of leg excluding first basal segment, strongly curved in distal half, inner margin finely denticulate. Endopodite short and wide, reaching slightly beyond first segment of exopodite, bearing laterally on inner margin (rarely on outer) a slender, distally-directed seta; tip truncate, set with circular line of slender hairs. *Left leg*: Basal segments subequal, longer than wide; lateral hair slightly in front of distal third of second segment. Exopodite less than one-half length of basipodite; first segment longer than second, pad large, bearing short slender hairs. Processes of apical segment very small, the distal broad, blunt, not set off sharply; the lateral spine-like, slender, tapering and curved; proximal pad set with long slender hairs; distal pad extending nearly to tip of distal process, set with coarse recumbent hairs. Endopodite narrow, reaching slightly beyond first segment of exopodite; bearing laterally a slender seta; tip with an asymmetrically curved line of slender hairs.

*Taxonomic position.*—*Diaptomus amatitlanensis* belongs to the subgenus *Mastigodiaptomus* Light, 1940, and resembles the other included species, *D. albuquerqueensis* Herrick and *D. purpureus* Marsh in all the major subgeneric characters. It is interesting that *D. albuquerqueensis* appeared in the same collection from which the type species of *D. amatitlanensis* has been described (Juday, 1915).

*D. amatitlanensis* is seemingly most closely related to *D. purpureus* in that the lateral spine of the right fifth leg of the male is short, while in *D. albuquerqueensis* it is comparatively much longer. The setae of the left leg of the female are intermediate in length between those of *D. albuquerqueensis* and *D. purpureus*. It differs distinctly from both other species in the absence of a hyaline lamella on the medial border of the second basal segment of the male right leg and in the broad, bulging second segment of the exopodite of the right leg of the male.

*Diaptomus lighti*, n. sp.

Fig. 1, h-j

*Specimens examined.*—Unique male holotype, U.S.N.M. no. 79368, Marsh

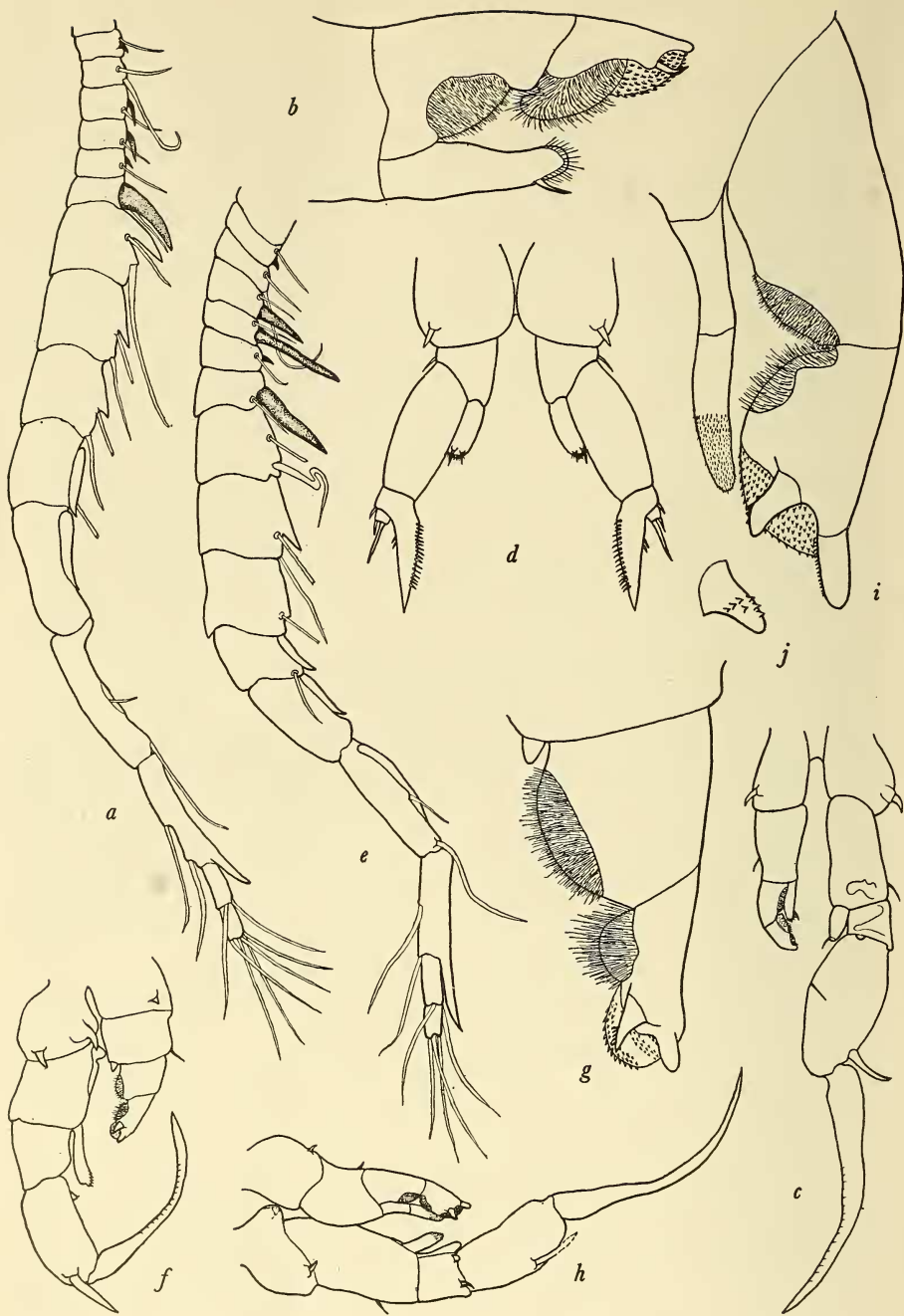


Fig. 1.—a-d, *Diaptomus amatillanensis*, new species: a, Right antennule (male); b, left fifth leg (male), anterior view; c, fifth pair of legs (male), posterior view; d, fifth pair of legs (female). e-g, *Diaptomus augustaensis*: e, Right antennule (male); f, fifth pair of legs (male), anterior view; g, left fifth leg (male), anterior view. h-j, *Diaptomus lighti*, new species: h, Fifth pair of legs (male), anterior view; i, left fifth leg (male), anterior view; j, proximal process of second segment of exopodite of left fifth leg (male), inside.

collection, slide 5355. Collected by Dr. C. D. Marsh in Big Timber Creek, Gloucester, N. J., September 19, 1931.

*Description*.—Female unknown.

*Male*: Length 1.75 mm, exclusive of furcal setae. Urosome relatively long, segments subequal in length, distal two abruptly narrowed. Antennules not reaching to end of furca; left with usual setal formula, three on segment 2, two each on segments 9, 11, and 22-24, five on segment 25, one on all others. Right antennule missing beyond third segment, showing evidence of having been broken prior to collection. *Fifth legs*: Elongated; left leg reaching to slightly beyond distal end of first segment of right exopodite. Spines of first basal segments short and slender. *Right leg*: Basal segment short and broad, rounded on outer margin; inner margin with broad, distally directed, spine-like lamella on distal posterior face. Second segment twice as long as broad; inner margin rounded; outer margin incurved proximally; hair short, at distal third of segment. First segment of exopodite subquadrate, straight-sided, distal lateral corner ending in a rounded, distally directed lobe; next to this lobe on the anterior face and overlying the next segment, is a longer clawlike lamella, curving outward; at inner distal angle on the posterior face is a small rounded lamella; running along the entire inner margin is a hyaline lamella with widened, tongue-like free end, projecting beyond the distal angle of the segment. Second segment about twice as long as broad, outer margin convex; lateral spine slightly in front of distal third of segment, length more than half diameter of segment, somewhat curved; in specimen described, the distal half of spine is bent in a right angle to the proximal so extent of curvature cannot be determined. Claw longer than the rest of exopodite. Endopodite short, not reaching distal end of first segment of exopodite, acuminate, distal surface minutely setose. *Left leg*: First basal segment subquadrate; inner face of second segment strongly convex, longer than outer, exceeding width of segment; outer margin concave, hair short, near distal end. Exopodite narrowed; first segment longer than second, outer face longer than inner; pad set with short, fine hairs. Second segment with inner face distinctly rounded; proximal pad with long slender hairs, distal pad set with short spinelets; processes short, subequal, digitiform; terminal distally directed, armed with inner marginal row of short setae; lateral process directed somewhat obliquely, armed on distal half of posterior inner face with rows of spinelets directed outward so that the tips of the outer spinelets project beyond the proximal margin of the process. Endopodite long, extending beyond middle of second segment of exopodite, 2-segmented, distal end blunt, dentate.

*Taxonomic position*.—*D. lighti* clearly belongs to the subgenus *Leptodiaptomus* Light, 1938. The characters of the left exopodite of the male fifth leg fit the diagnosis given for that group. It differs from any other member of the group in the shape, size and attachment of the hyaline lamella on the inner margin of the first segment of the right exopodite. This lamella, undoubtedly homologous with that in a similar position in many of the other species of the group, most closely resembles that of *D. signicauda*. It differs in being broader, less rounded distally, and in being attached only along the margin of the segment. The species is not only considerably larger than *D. signicauda*, but is large for the group as a whole. *D. lighti* is uniquely distinguished by the distinct claw-like lamella on the anterior face of the first segment of the right exopodite.

*Diaptomus augustaensis* Turner, 1910

Fig. 1, e-g

*Specimens examined*.—Unique male specimen, Marsh slide 5317. Collected by R. E. Coker at Chapel Hill, N. C., May, 1931.

*Description*.—*Male*: Length approximately 2.5 mm (measurements based on dissected specimen). Left antennule with usual setal formula. Segments 14–16 of right antennule markedly swollen, major spines on segments 10, 11, and 13 conspicuous, straight, longer than width of segments; that on 11 longest, almost twice length of that on segment 10; spine on segment 13 widest, almost as long as that on segment 11. Large, distally directed spinous process on distal third of segment 15. Process of antepenultimate segment tapering, longer than penultimate segment. *Fifth legs*: Basal spines short and stout. *Right leg*: First basal segment about as long as broad, margins rounded; large hyaline lamella on distal half of anterior inner surface, broad at base, terminating in curved distally directed process. This process partially overlies a hyaline lobe on the proximal inner margin of the second segment. Inner margin of second segment longer than outer, lobe extended as narrow hyaline border for two-thirds of its length. First segment of exopodite narrowed distally, outer margin longer than inner. Length of second segment more than twice width, outer margin concave; prominent spine at proximal fourth of inner margin. Lateral spine close to distal end, stout, slightly longer than width of segment. Claw longer than exopodite, strongly curved, denticulate on inner margin. Endopodite slender, one-fourth longer than first segment, inner margin setose in distal fourth, terminating in short rounded process. *Left leg*: Basal segments subequal in length, wider than long. Lateral hair at distal angle of second segment. First segment of exopodite almost as long as wide, pad narrow with short, slender hairs; apical segment longer than wide, terminal process short, digitiform; lateral process a flat, broad, curving spine, armed on distal half of upper margin with short, stiff setae; pads large, proximal set with long slender hairs, distal with rows of conspicuous, heavy spinelets. Endopodite rudimentary.

*Taxonomic position*.—*D. augustaensis* clearly belongs to the subgenus *Hesperodiaptomus* Light, 1938, as indicated by the flat, curving, spinelike proximal process of the terminal segment of the left fifth leg of the male and the distal location of the lateral spine of the second segment of the exopodite of the right leg; the presence of a third segment in the exopodite of the fifth leg of the female (Turner, 1910); and the long spinous process on the antepenultimate segment of the right antennule of the male. It differs markedly from the other species of the subgenus in numerous particulars, notably the relatively large blunt spine on the inner face of the second segment of the exopodite of the right fifth leg of the male, the unusual hyaline membranes of the first and second basal segments of the same leg, and in the rudimentary endopodite. This endopodite may be variable in character. A first glance at Turner's drawing in the description of the type makes it appear that the endopodite is longer than noted in the specimen herein described, but if the drawing is reconstructed so that the endopodite bears its proper relationship to the second basal segment, instead of arising as it seems to as a part of the first basal segment, it would appear to be also very much reduced. Turner's description of the species refers to it as a "small, slender species," but the specimen herein described is comparatively large, as are many other species of the subgenus.

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PROCEEDINGS OF THE ACADEMY AND  
AFFILIATED SOCIETIES

## THE ACADEMY

## 369TH MEETING OF THE BOARD OF MANAGERS

The 369th meeting of the Board of Managers was held in the Library of the Cosmos Club on Friday, October 3, 1941. President CLARK called the meeting to order at 8:05 p.m., with 14 persons present, as follows: A. H. CLARK, F. D. ROSSINI, H. S. RAPPLEYE, J. H. KEMPTON, F. C. KRACEK, J. E. GRAF, F. H. H. ROBERTS, JR., F. G. BRICKWEDDE, H. B. COLLINS, JR., F. M. SETZLER, H. L. CURTIS, L. W. PARR, C. L. GARNER, and, by invitation, R. J. SEEGER.

The minutes of the 368th meeting were read and approved.

The President announced the following appointments: R. J. SEEGER, to be the Academy's delegate to the 175th anniversary celebration of Rutgers University, at New Brunswick, N. J., on October 9 to 11, 1941; C. L. GARNER (chairman), R. E. GIBSON, L. V. JUDSON, W. C. LOWDERMILK, P. A. SMITH, and CHARLES THOM, to constitute the Committee on Meetings, until May, 1942.

The Board considered and elected to membership one resident person.

The Committee to Publish the Directory for 1941, H. S. RAPPLEYE and F. D. ROSSINI, presented its report as follows:

In accordance with the action taken by the Board of Managers at its meeting on March 14, 1941, the 1941 Directory of the Academy and its Affiliated Societies was produced by the photolithographic process, in the usual 6 by 9 inch size with a red cover, and with a new form of contents. In the lists of members of the affiliated societies, the names of those persons who are also members of the Academy are marked with an asterisk.

In the production of the 1941 Directory, the master pages of the copy in its new form were typed by a private individual under special contract, in order to provide for close contact with the work and to make possible changes in copy at a minimum of cost. The job of planographing and printing